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EXAMINER

PAK, SUNG H

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/082,833  
Filing Date: February 25, 2002  
Appellant(s): GRAVES ET AL.

**MAILED**

**MAR 13 2006**

**GROUP 2800**

Gregory S. Kolocouris  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 12/12/2005 appealing from the Office action mailed 2/7/2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

No amendment after final has been filed.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

### **(8) Evidence Relied Upon**

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

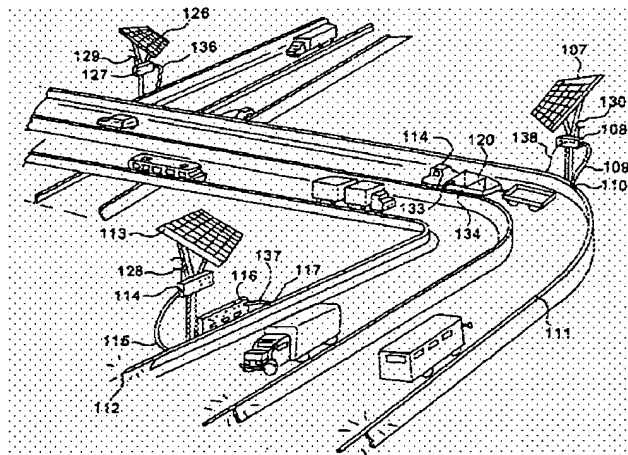
### (9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 15-38, 40-41, 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tribelsky et al (US 6,592,245 B1) in view of Sugiyama et al (US 5,982,969).

Tribelsky discloses an optical device with all the limitations set forth in the claims, except it does not explicitly teach the use of a reflecting layer in a strip form extending along the transmission tube, transmission tube made of acrylic, and a light source being a light emitting diode.

Nevertheless, Tribelsky does disclose:



a delineation marker (delineating the edges of the road- see figure above); wherein the delineation marker includes a guard rail for the road (figure above); wherein the guard rail

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extends along a curved portion of the road (figure above); wherein the delineation maker includes plurality of guard rails that are plurality of barrier walls (on either side of the road- see figure above); one or more optical transmission tubes provided on one or more of the barrier walls, the transmission tubes configured to illuminate and outline the travel path (Figure above; abstract); wherein the optical transmission tube is an elongated body that is substantially transparent (see column 2 lines 53-62: 'side emitting fiber' inherently comprises elongated body that is substantially transparent); wherein a light source is provided at the end portion of the elongated body (see column 2 lines 55-56); wherein the optical transmission tube assembly is connected to the top edge of the delineation marker (figure above); wherein the delineation marker convey impending curve or edge of the road (figure above); wherein the illumination enhances vehicle driver preview distance (inherently disclosed by the teaching of the reference). Although a 'reflective layer' is inherent in the side emitting optical fiber of Tribelsky, Tribelsky does not explicitly teach the use of a reflective layer in a strip form.

On the other hand, Sugiyama explicitly teaches the use of a light emitting diode as the light source, transmission tube being made of acrylic, and a strip of light reflective layer in a side emitting optical fiber device (Figs. 1-2; column 4 lines 30-31; column 7 line 62; column 4 line 65). Sugiyama explains that the prior art side emitting optical transmission tubes lack desirable qualities, and that Sugiyama's configuration is advantageous and desirable because it allows for optical transmission tube with improved environmental resistance, and low operating power consumption (column 1 line 7- column 2 line 30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of

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Tribelsky to have a reflective strip layer and a light emitting diode as a light source as taught in Sugiyama.

### **(10) Response to Argument**

#### 1. Tribelsky '245 does NOT teach away from the use of an LED as a light source

Starting on page 7 of the applicant's Appeal Brief, it is argued, "... Tribelsky '245 teaches away from the use of an LED and, thus, there is no motivation to combine the two references" (Appeal Brief, page 7- paragraph 5). Applicant bases this argument on following 2 assertions: 1) Tribelsky requires a high intensity light source, such as 1000 Watt lamp (pages 7- paragraph 6, page 8- paragraph 3); 2) Tribelsky's device is directed to the use of a long light guides, such as optical fibers 2 kilometers in length (page 7- paragraph 7~ page 8 paragraph 1) which would require high intensity light source. Applicant reasons that since Tribelsky's device is directed to the use of a long light guides and a high intensity light source, the "low-intensity light source such as an LED" would be unsuitable for the intended use for Tribelsky (page 8- paragraph 3~4).

The examiner respectfully submits that: 1) while it is true that Tribelsky '245 does disclose a high **power** (i.e. consuming great amount of power- measured in Watts) light source such as 1000 Watt lamp, it is merely one example of high **intensity** (i.e. outputting great amount of light- NOT measured in Watts) light source that may be used; 2) while it is true that Tribelsky '245 does disclose 2 kilometer optical fibers, it is merely one example of optical fibers that can be used. The actual teaching of the invention is NOT limited to long length optical fibers, and

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other examples of optical fibers involve much shorter length (such as lengths suitable for stop signs).

First, the examiner respectfully submits that Tribelsky '245 does NOT limit the light source that can be used in its invention to 1000 Watt high power lamps. On the contrary, Tribelsky explicitly states that light source can have a broad range of power rating, such as 1 Watt to 1000 Watt. The examples of the light source include:

... such as a Micro wave fiber lamp or high intensity lasers at about 400 nm to about 700 nm, between about 1 to 1000 Watt output powers.  
(column 13 lines 13-15; emphasis added)

while it is true that generally, high power light source will produce high intensity light beam, it is not necessarily so, as evidenced by Tribelsky's use of a 1 Watt high intensity laser. In addition, applicant admits that LEDs fall within 5 Watt power consumption at the time of the invention was made (page 8- last paragraph). Therefore, the 1-Watt high intensity laser of Tribelsky '245 would fall well within the 5 Watt power consumption anticipated by the LED light source. Further, applicant's own Exhibit D (titled, "Light Emitting Diodes", [www.wikipedia.com](http://www.wikipedia.com)) teaches that LEDs generally provide great amount of light (i.e. relatively high intensity) compared to traditional incandescent lamps (Exhibit D- page 9). Thus, the use of LEDs would not be inconsistent with Tribelsky's use of its light source. For these reasons, the examiner respectfully submits that Tribelsky '245 does NOT teach away from the use of a LED light source.

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Second, the examiner respectfully submits that Tribelsky '245 does NOT limit its use of optical fibers to those of 2 kilometers in length. Specifically, Tribelsky discloses the use of a much shorter optical fibers. For example:

These device embodiments are especially useful in many transportation related applications. Firstly, a device wherein the indication path support is a road sign or signal. Relevant examples include (a) for highlighting the outline of ... stop signs... Secondly, a device wherein the indication path support is a horizontal traffic or pedestrian barrier. Relevant examples include... (b) use on road side indicating fences... Thirdly, a device wherein the indication path support is the body or appendage of a transportation vehicle, such as a car..., for example... may be hub cap, bumper, door frame...  
(column 8 lines 43-65; emphasis added)

Further, Tribelsky explicitly teaches the use of optical fibers on a side of a helicopter, which has lengths much less than 2 kilometers (Fig. 1). Therefore, Tribelsky does not limit the use of its optical fibers to long fibers that are 2 kilometers in length. Much shorter lengths of optical fibers may be used for demarking the side of the road, especially on road side fences as indicated above. For these reasons, the disclosure of Tribelsky is fully consistent with the use LEDs and does NOT teach away as applicant asserts.

## 2. Tribelsky '245 does NOT teach away from the use of a reflective strip

On page 9 of the Appeal Brief, it is argued that “the reflective strip of Sugiyama '969 would serve no function if applied to the light guide of Tribelsky '245. Thus, there is no motivation to combine the two references” (page 9- paragraph 6). Applicant basis this conclusion on the assertion that “Tribelsky '245 employs a light guide including side emitting optical fibers that transmit light via total internal reflection (col. 4, lines 64-67)” (page 9- paragraph 7; emphasis added). Further, applicant asserts that any light that is inputted on the



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side of this side emitting fiber would be transmitted via total internal reflection along the length of the fiber (reasoning based on applicant's Exhibit E). Thus, the applicant reasons, "If the reflective layer of Sugiyama '969 were combined with the light guide of Tribelsky '245, light reflected from the reflective layer would be transmitted along the length of the fiber rather than toward the desired location" (page 10- paragraph 2).

The examiner respectfully submits that applicant's reasoning is flawed for at least 2 reasons: 1) the side emitting fiber of Tribelsky does NOT transmit light via total internal reflection, and 2) disposing reflective strip does NOT input the light back into the side emitting light, and does NOT transmit the light towards either ends of the fiber.

First, the examiner respectfully submits that the side emitting fiber of Tribelsky does NOT transmit light via total internal reflection. The part of Tribelsky's specification that the applicant cites for this assertion (col. 4 lines 64-67) is NOT directed to side emitting fibers, but rather it is directed to the meaning of "light guide" in general (see column 4, line 64- "In the context of the present invention a "light guide" relate to ..."). Side emitting fibers of Tribelsky CANNOT perform total internal reflection because it MUST emit the transmitted optical beams on the SIDE of the fiber (hence the term, "side emitting fiber"). Instead, the optical fiber of Tribelsky carries out partial internal reflection and allows the light to escape on its side. Tribelsky utilizes a plurality of holographically grated layers attached to the side of the fiber for affecting "side emitting" of the transmitted beam (column 5 lines 5-16). Sugiyama '969 also utilizes partial internal reflection to transmit the optical beam along the fiber, but uses reflective strips to emit the optical beam on the side of the optical fiber (see Fig. 4 of Sugiyama).

As such, disposing the reflective strip of Sugiyama on the optical fibers of Tribelsky does NOT input the light beam into the side of the optical fiber. Reflective strips of Sugiyama is for emitting the transmitted optical beam within the fiber. Disposing the reflective strip of Sugiyama would allow for a focused, more efficient side emission of optical beams in Tribelsky and would offer the advantage of lower operating power consumption as discussed in the Final Office Action. Further more, Exhibit E, on which applicant relies for the argument, merely discloses a particular type of side emitting fiber, and how that particular fiber would transmit optical beam in a hypothetical situation, i.e. if an optical beam were inputted into the side of the fiber. It discloses nothing about disposing reflective strips and the mechanism of side emission.

In addition, applicant argues, “Tribelsky ‘245 employs a bundle of optical fibers enclosed within a semi-opaque sleeve (col. 8, lines 14-34)” (page 10- paragraph 4). Then, applicant asserts, “If the reflective layer of Sugiyama ‘969 were provided... it would result in a plurality of reflective layers disposed throughout a bundle of optical fibers. The plurality of reflective layers would scatter light in different directions.” (page 10- paragraph 4).

The examiner respectfully submits that Tribelsky does NOT limit the optical fibers to be “bundled” optical fiber. Instead, Tribelsky explicitly discloses:

The present invention discloses a novel application methodology wherein side emitting fibers are used (single fiber or multi tail fiber bundles) (column 2 lines 53-55; emphasis added)

Therefore, applicant’s argument relies merely on one embodiment of Tribelsky’s invention, and does not apply to “single fiber” embodiment of the disclosed invention.

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For these reasons, the examiner respectfully submits that Tribelsky's disclosure does NOT teach away from using the reflective strip of Sugiyama.

3. Tribelsky '245 does NOT teach away from a substantially transparent transmission tube

On page 11 of the Appeal Brief, it is argued, "In fact, the side emitting optical fibers or [sic] Tribelsky '245 are *not* substantially transparent. As explained above, light that impinges on the side of the fibers does not pass directly through the fibers" (page 11- paragraph 3).

The examiner respectfully submits that claims 15, 27, and 34 merely recite, "an elongated body that is substantially transparent"; and claim 41 merely recites "a substantially transparent tubular body" (see claims 15, 27, 34, and 41 of the instant application). As discussed in the Final Office Action, Tribelsky inherently discloses "an elongated body" that is "substantially transparent" and "substantially transparent tubular body" because it discloses a side emitting optical fiber. All optical fibers are "elongated bodies" or "tubular bodies", and they are inherently substantially transparent because they conduct light beam along the length of the fiber (see column 4 line 64~ column 5 line 4 of Tribelsky for general discussion of optical fibers, and column 5 lines 59-67 for discussion of "side emitting" fibers). In addition, side emitting fibers of Tribelsky are substantially transparent, because the light beams are emitted from the side of the fiber (i.e. light passes through and escapes from the fiber). Therefore, Tribelsky fully discloses "an elongated body that is substantially transparent" or "substantially transparent tubular body" as recited in the claims of the instant application.

Therefore, the examiner respectfully submits that Tribelsky does NOT teach away from substantially transparent transmission tube.

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**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Sung Pak

Primary Patent Examiner

AU 2874



Conferees:

Rodney Bovernick, Supervisory Patent Examiner



Drew Dunn, Supervisory Patent Examiner

